striking the earth, is pushed outward in all directions as a cold gust. Not only rain and hail, but every collection of small particles of water constituting a fog or cloud cools the air into which it is allowed to evaporate. If, therefore, a layer of dry air is flowing over a layer of cloudy air, the mixture of the dry air with the cloud and the consequent evaporation of the cloud into it will always produce a mixture, or a resulting moister air, that is sufficiently cold to fall rapidly downward. These mixtures of masses of air having different temperatures and moistures are those treated of by Brillouin in a memoir which is published on an earlier page of this REVIEW; they constitute the ordinary phenomena of cloudy weather. Knowing the pressure, temperature, moisture, and movement of the two masses of air, we should be able to predict the cloud phenomena, and *vice versa;* knowing the clouds, we must learn to infer something as to the temperature and other conditions of the air.

RECENT EARTHQUAKES.

With regard to the seismograph kept in operation at Adelbert College, Cleveland, Ohio, by Prof. E. W. Morley, he reports that no disturbances were recorded during the month of October. With regard to its sensibility he notes that—

> The instrument is one that records on smoked glass the horizontal components of any earth tremor and it would not be easy to alter the construction of the lever which determines the ratio of the trace to the original motion.

October 2, 8:42 a. m., shocks were felt at San Francisco; 8:45, Alma and Santa Cruz, Cal.

On October 21 an earthquake shock was felt at 10:20 p. m., at Salem, Va.; 10:30 p. m., Wytheville, Va., preceded by a rumble; 10:30 p. m., Winston, N. C., two waves in close succession. At Washington, D. C., the Marvin seismograph recorded earthquake shocks at 10:25 p. m., and frequently between 10:25:40 and 10:26:40.

DISTANT CLOUD BANKS.

For many years the Editor has been accustomed to keep notes and diagrams of the banks of clouds that are often seen low down in the distant horizon. The easiest way of making the record is pictorial, using a small circle with north, south, east, west lines intersecting at the center. On this circle the symbols and arrows showing the movements of clouds can easily be located, a full line to indicate the lowest wind; a dashed line, the lower clouds; a dotted line, the upper clouds. Whenever a cloudy area approaches from the west, the bank of clouds appears from one to twelve hours earlier in the distant horizon. Whenever a hurricane passes up the coast, perhaps even entirely at sea, the observer at Washington notices first a cloud bank having its maximum altitude in the south-southeast, subsequently in the southeast, and finally disappearing in the northeast. Such observations and records go a long way to eke out the information given by the morning weather map. For instance, on Monday, October 4, 8 a. m., Hatteras reported a northeast wind of 32 miles, threatening weather, and falling barometer. Over the rest of the Middle Atlantic States northerly winds and clear weather prevailed. At Washington the cloud bank was observed to have its maximum altitude of about 10° in the southeast; the upper edge of the bank cut the horizon at the points south-southeast and east-northeast, and seemed to indicate the presence of a storm area fully 500 miles away.

METEOROLOGICAL TABLES.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

Table I gives, for about 130 Weather Bureau stations making two observations daily and for about 20 others making only the 8 p. m. observation, the data ordinarily needed for climatological studies, viz, the monthly mean pressure, the monthly means and extremes of temperature, the average conditions as to moisture, cloudiness, movement of the wind, and the departures from normals in the case of pressure, temperature, and precipitation; the altitudes of the instruments, the total depth of snowfall, and the mean wet-bulb temperatures are now given.

Table II gives, for about 2,400 stations occupied by voluntary observers, the extreme maximum and minimum temperatures, the mean temperature deduced from the average of all the daily maxima and minima, or other readings, as indicated by the numeral following the name of the station; the total monthly precipitation, and the total depth in inches of any snow that may have fallen. When the spaces in the snow column are left blank it indicates that no snow has fallen, but when it is possible that there may have been snow of which no record has been made, that fact is indicated by leaders, thus (. . . .).

Table III gives, for about 30 Canadian stations, the mean pressure, mean temperature, total precipitation, prevailing wind, total depth of snowfall, and the respective departures from normal values. Reports from Newfoundland and Bermuda are included in this table for convenience of tabulation.

Table IV gives detailed observations at Honolulu, Republic of Hawaii, by Curtis J. Lyons, meteorologist to the Government Survey.

Table V gives, for 26 stations, the mean hourly temperatures deduced from thermographs of the pattern described and figured in the Report of the Chief of the Weather Bureau, 1891–92, p. 29.

Table VI gives, for 26 stations, the mean hourly pressures as automatically registered by Richard barographs, except for Washington, D. C., where Foreman's barograph is in use. Both instruments are described in the Report of the Chief of the Weather Bureau, 1891–92, pp. 26 and 30.

Table VII gives, for about 130 stations, the arithmetical means of the hourly movements of the wind ending with the respective hours, as registered automatically by the Robinson anemometer, in conjunction with an electrical recording mechanism, described and illustrated in the Report of the Chief of the Weather Bureau, 1891–92, p. 19.

Table VIII gives, for all stations that make observations at 8 a. m. and 8 p. m., the four component directions and the resultant directions based on these two observations only and without considering the velocity of the wind. The total movement for the whole month, as read from the dial of the Robinson anemometer, is given for each station in Table I. By adding the four components for the stations comprised in any geographical division one may obtain the average resultant direction for that division.

Table IX gives the total number of stations in each State from which meteorological reports of any kind have been received, and the number of such stations reporting thunderstorms (T) and auroras (A) on each day of the current month.

Table X gives, for 56 stations, the percentages of hourly sunshine as derived from the automatic records made by two essentially different types of instruments, designated, respectively, the thermometric recorder and the photographic